

# Motorola

# AUTO RADIO

MODEL  
554

## S E R V I C E M A N U A L

### GENERAL INFORMATION

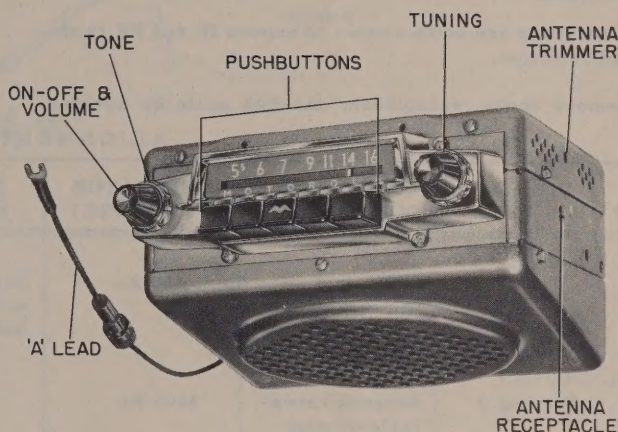
TYPE - Model 554 is a universal automotive type super-heterodyne receiver with self-contained speaker, designed for underdash mounting. Receiver may be mounted behind instrument panel of some cars by using Trim Plate AK-111.

TUNING RANGE - 540 to 1605 Kc IF - 455 Kc

POWER INPUT - 6.3 volts DC; 5 amperes

POWER OUTPUT - 3.5 watts (max)

TUBE COMPLEMENT -	Type	Function
	6BD6	RF Amplifier
	6BE6	Converter
	6BD6	IF Amplifier
	6CR6	Det-AVC-AF Amplifier
	6AQ5	Power Amplifier
	6X4	Rectifier



### MOTOROLA AUTO RADIO WARRANTY SERVICE STATION PROCEDURE FOR BRANDED MODELS

1. The definition of a Motorola Branded Model is one that is branded with the Motorola name, and distributed to dealers through authorized Motorola Distributors.

2. Before performing a warranty repair on a Motorola Branded Auto Radio, you must first receive the Customer's Warranty Policy from the customer. This policy must be filled out by the selling dealer at the time of retail purchase. The Customer's Warranty Policy must show the radio to be within the ninety-day warranty period if the repair is to be handled under the Motorola Auto Radio Warranty Plan.

3. The removal or reinstallation of the radio, the elimination of motor noise, tire static, electrical interference, or faulty installation and aerial repairs are not considered as warranty repairs. Consequently, charges for these services are to be borne by the customer.

4. Fill in the Motorola Auto Radio Warranty Labor Claim, Part No. 54P480884, and mail White and Green copies to the Motorola Distributor serving your area. The Yellow copy is to be retained by the Warranty Service Station for his files.

5. Defective parts for warranty repairs made on Motorola Branded Auto Radios are to be sent to your Motorola Distributor for free replacement, supported with the defective parts return form which you are now using.

6. Only those service shops authorized by their Motorola Distributor can perform repairs within the warranty period on a no-charge basis to the customer. If you are not already authorized as a Motorola Auto Radio Warranty Service Station, and you are interested in handling this service, please contact your Motorola Distributor for complete details.

### TO SET PUSHBUTTONS

This receiver has a "Quick Set" Automatic tuner, with 5 "Push-to-Lock" pushbuttons for automatic station selection.

To set the pushbuttons for automatic tuning, proceed as follows:

1. Tune in the desired station with the manual tuning knob.

Tune carefully until you are exactly on the station.

2. Pull out the first pushbutton to be set, to unlock the button for station set-up, and then push button in firmly to set and lock the button.

3. Follow the above procedure for the remaining four buttons.

LIST APPLICABLE BULLETINS & SUPPLEMENTS HERE:

MOTOROLA, INC. 4545 AUGUSTA BLVD. CHICAGO 51, ILLINOIS

Part No. 68P532229

Price 10 Cents

Printed in U.S.A.



## ALIGNMENT

### EQUIPMENT REQUIRED:

1. A small fibre screwdriver for IF and RF alignment.
2. A special tool (Motorola Part No. 66A76278) for adjusting tuner cores.
3. A dummy antenna for RF and tuner alignment constructed as shown in Figure 1.
4. An accurately calibrated AM signal generator.
5. A low range output meter.

### PROCEDURE

1. Remove top and bottom cover to expose IF and RF trimmer adjustments.
2. Remove knobs, escutcheon, and dial scale background

bracket to expose openings for tuning core adjustments.

3. Connect output meter across voice coil of speaker.
4. Attach a 6 volt DC power supply across the "A" lead and chassis ground of receiver.
5. Turn receiver "on". Turn the volume control and tone control to maximum clockwise position. Allow receiver to warm up for several minutes.
6. To avoid overloading the receiver, keep output of receiver at 1 watt (1 watt = 1.79 volts on output meter) by reducing signal generator output (not receiver volume control) as stages are brought into alignment.

**IMPORTANT:** Do not push in on the alignment tool when adjusting the tuner cores. The slightest inward pressure on the alignment tool may move the tuner carriage and result in inaccurate alignment.

ALIGNMENT CHART

STEP	DUMMY ANTENNA	GENERATOR CONNECTION	GENERATOR FREQUENCY	TUNER SET TO	ADJUST (See Fig. 1)	REMARKS
<b>IF ALIGNMENT</b>						
1.	.1 mf	6BE6 grid (pin #7)	455 Kc	High frequency end of dial (cores out)	1, 2, 3 & 4	Peak for maximum in order indicated. Check by repeating procedure.
<b>RF ALIGNMENT</b>						
2.	See Fig. 1	Antenna receptacle through dummy	1605 Kc	"	5	Peak for maximum.
3.	"	"	1300 Kc	Tune for max.	6 & 7	"
<b>TUNER ALIGNMENT</b>						
NOTE: The tuner cores have been correctly aligned at the factory. Field alignment of the tuner is not recommended unless components have been replaced or tampered with. Tuner cores should be backed out so they will have no effect on trimmer adjustments.						
4.	See Fig. 1	Antenna receptacle through dummy	1605 Kc	High frequency end of dial	5, 6 & 7	Peak for maximum in order indicated.
5.	"	"	1180 Kc	1180 Kc - See dimension in Figure 1.	8, 9 & 10	"
6. Repeat steps 4 and 5. Then cement core adjustments in place with glyptal.						
<b>ANTENNA TRIMMER ADJUSTMENT</b>						
7.	-	-	-	Weak station at approx. 1400 Kc	7	With receiver installed in car, peak antenna trimmer for maximum volume. Ant should be fully extended.

## TUNER AT-117

### TO REPLACE TUNING CORES OR COILS

1. Remove the control knobs, escutcheon, and dial scale background bracket.
2. Disengage manual drive shaft from the pinion shaft and drive disc assembly.
3. Remove the 4 hexhead screws that hold tuner assembly. Tilt tuner slightly downward at front end. This action lifts back end up providing sufficient clearance from any chassis obstructions for coil or core replacement.

4. Remove the tube shield and 6CR6 tube to provide clearance behind L-2.

### TO REPLACE TUNING CORE

1. Turn adjusting screw of core to be replaced several times to free it from the cement at the mounting grommet.
2. Push screw through the grommet, permitting the core to drop out at the back of assembly.
3. Insert replacement tuning core into coil from rear of



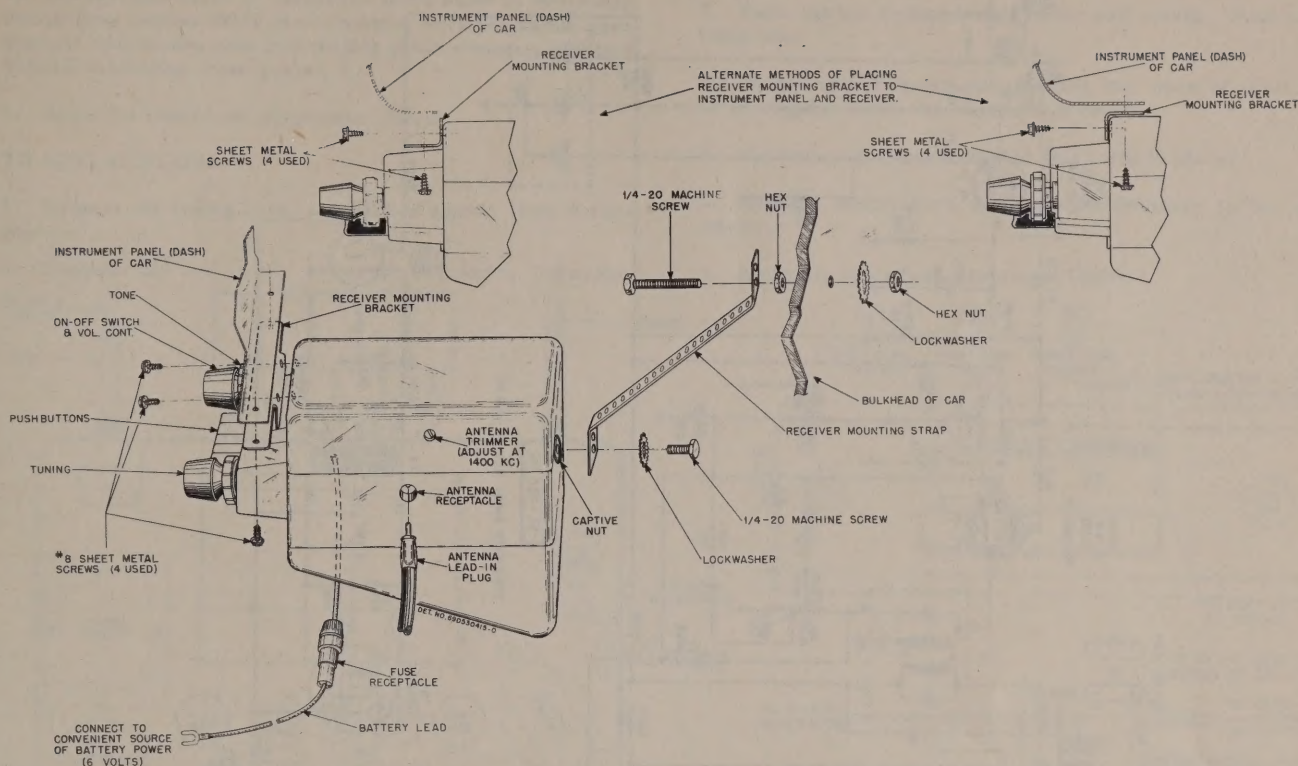


FIGURE 4. RECEIVER INSTALLATION

## REPLACEMENT PARTS LIST

NOTE: When ordering parts, specify model number of set in addition to part number and description of part.

Ref. No.	Part Number	Description	List Price	Ref. No.	Part Number	Description	List Price
<b>ELECTRICAL PARTS</b>							
C-1	21A591682	Cap, metal mica: 90 mmf 500V.....	.20	C-13	21R482726	Cap, ceramic disc: .01 mf 500V.....	.30
C-2	8R121001	Cap, paper: .006 mf 400V...	.25	C-14	8R121573	Cap, paper: .1 mf 200V.....	.30
C-3	20A513232	Cap, mica trimmer: 20 to 180 mmf; with bracket.....	.40	C-15	21R115860	Cap, ceramic: 1000 mmf 500V	.20
C-4	8R121005	Cap, paper: .05 mf 100V....	.25	C-16	8R121566	Cap, paper: .02 mf 400V....	.25
C-5	21R115955	Cap, molded: 4.7 mmf 500V..	.20	C-17	21R482726	Cap, ceramic disc: .01 mf 500V.....	.30
C-6	20A481526	Cap, variable mica: 20 to 180 mmf.....	.30	C-18	21R115856	Cap, ceramic tubular: 470 mmf 500V.....	.20
C-7	21R120124	Cap, ceramic: 100 mmf 500V.	.25	C-19	21R114554	Cap, ceramic disc: 470 mmf 500V.....	.20
C-8	21R115593	Cap, ceramic disc: 47 mmf 500V.....	.15	C-20	8R121001	Cap, paper: .006 mf 400V...	.25
C-9	21A71872	Cap, ceramic: compensating; 400 mmf 5%, NTC 150 PPM....	.40	C-21	23A485677	Cap, electrolytic: 10-15 mf/350V; 20 mf/25V...	2.25
C-10	20A77537	Cap, variable mica: 5 to 280 mmf.....	.25	C-22	21A522033	Cap, special spark plate....	.25
C-11	8R121567	Cap, paper: .05 mf 400V....	.25	C-23	8K17028	Cap, paper: .5 mf 100V.....	.55
C-12	8R121005	Cap, paper: .05 mf 200V....	.25	C-24	8K17028	Cap, paper: .5 mf 100V.....	.55
				C-25	8R121572	Cap, paper: .03 mf 10% 1000V.....	.35



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3. Connect output meter across voice coil of speaker.
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5. Turn receiver "on". Turn the volume control and tone control to maximum clockwise position. Allow receiver to warm up for several minutes.
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4. Remove the tube shield and 6CR6 tube to provide clearance behind L-2.

### TO REPLACE TUNING CORE

1. Turn adjusting screw of core to be replaced several times to free it from the cement at the mounting grommet.
2. Push screw through the grommet, permitting the core to drop out at the back of assembly.
3. Insert replacement tuning core into coil from rear of



tuner and push screw through grommet until head of screw protrudes sufficiently for alignment purposes.

4. Reassemble tuner to receiver. Care must be exercised in engaging manual drive shaft, making sure the pinion gear engages the crown gear and mating pinch washers and disc without distorting these parts.

5. Align the tuner (see Alignment Chart).

#### TO REPLACE COIL

1. Remove the tuning core, as outlined above, from defective coil.

2. Unsolder the coil leads, not at the coil form, but at the

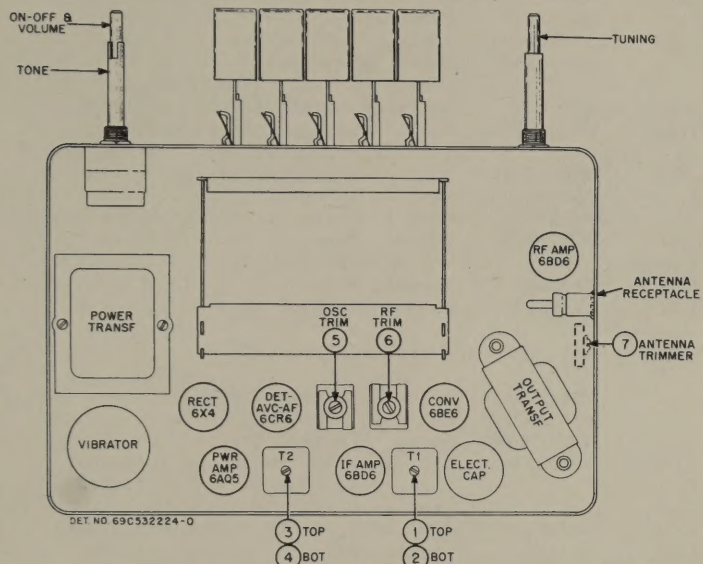


FIGURE 1. TUBE AND TRIMMER LOCATIONS AND DUMMY ANTENNA DETAIL

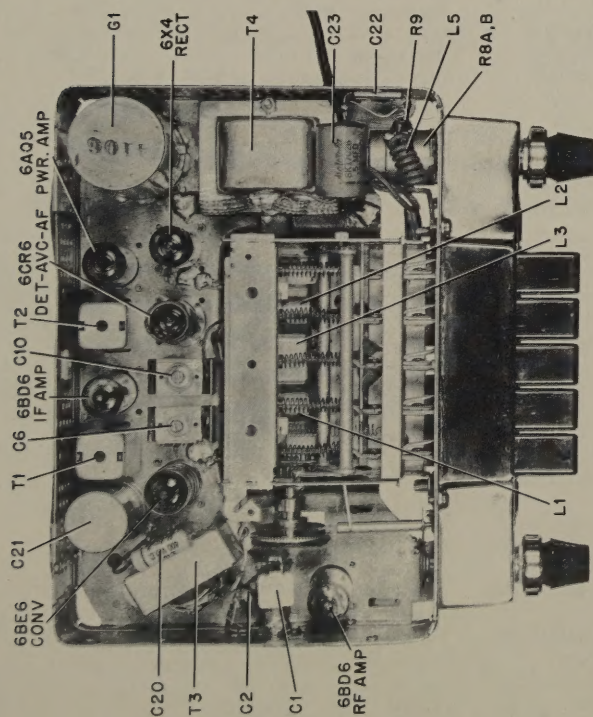


FIGURE 2. PARTS LOCATIONS

connecting points on chassis (the replacement coils contain the correct lead length).

3. Bend out the crimped edge of the coil shield. Push coil form out.

4. Insert replacement coil, setting the base of the coil form slightly below the edge of coil shield.

5. Re-crimp the shield to hold coil form in place.

6. Replace tuning core and reassemble tuner to the receiver.

7. Align the tuner (see Alignment Chart).

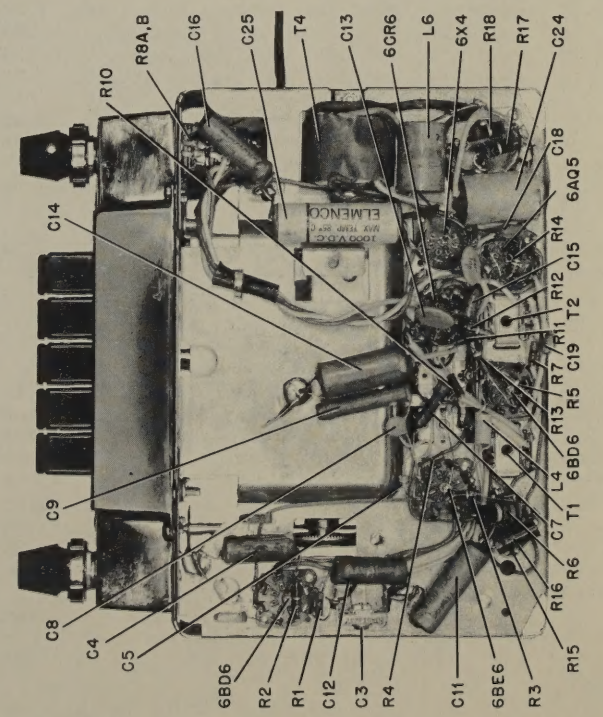
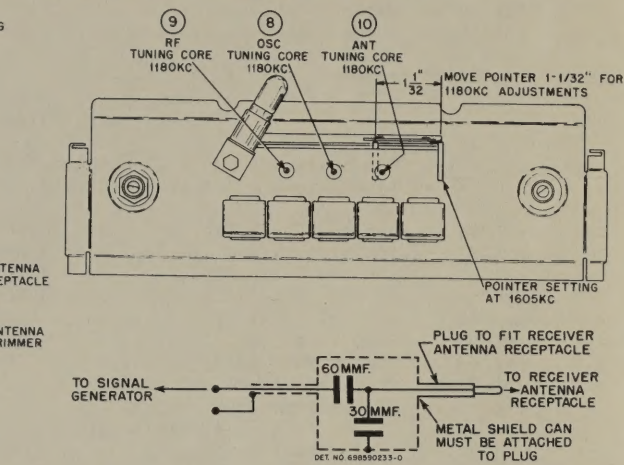


FIGURE 3. SCHEMATIC DIAGRAM

NOTES  
RESISTORS INDICATED IN OHMS  
K=ONE THOUSAND (1000) OHMS  
M=ONE MILLION (1,000,000) OHMS  
CAPACITORS INDICATED IN MMF UNLESS  
OTHERWISE SPECIFIED  
VOLTAGES MEASURED TO CHASSIS WITH VTVM.  
INPUT VOLTAGE 7V.D.C.  
VOLTAGE TOLERANCE  $\pm 10\%$   
NO SIGNAL INPUT.



Ref. No.	Part Number	Description	List Price	Part Number	Description	List Price
F-1	65K16248	Fuse: 9 amp.....	.05	2A522069	Nut, hex: 3/8-32 x 1/2 (vol cont & tuning shaft mtg).....doz	.15
G-1	48B3333	Vibrator: 4-pin; non-sync; 6 volts.....	3.80	2S7087	Nut, speed: .093" round (dial scale mtg).....per/c	.50
I-1	65X10867	Bulb: 6-8V; .25A; bayonet base; #44.....	.15	51K512203	Pinion Shaft & Drive Disc Assembly	.35
L-1	24K522272	Coil, antenna.....	.95	64K531566	Plate, dial scale retaining.....	.25
L-2	24K522271	Coil, RF.....	1.10	1V522205	Pointer, dial.....	.15
L-3	24K522270	Coil, oscillator.....	1.55	1V522215	Pushbutton: includes clip; less monogram.....	.20
L-4	24A522284	Choke, filament.....	.10	1V522216	Pushbutton: includes clip; with monogram.....	.25
L-5	24K522091	Choke, hash.....	.10	9A472148	Receptacle, antenna.....	.25
L-6	24A512119	Choke, hash.....	.65	34B522007	Scale, dial: glass.....	.15
LS-1	50C522055	Speaker, PM: 5" x 7" oval; 3.2 ohm VC.....	5.50*	3S490733	Screw, sheet metal: #8 x 1/4 Phillips head (escutcheon mtg)doz	.20
		exch	4.15	3S7107	Set screw (control knob retaining).	.25
<u>Resistors</u> <u>Note:</u> All resistors are carbon insulated type unless otherwise specified.				51K522031	Shaft Assembly, manual drive: complete.....	1.20
R-1	6R6004	1 meg 20% 1/2W.....doz	1.20	26A592419	Shield, tube: spring type.....	.05
R-2	6R6291	560 10% 1/2W.....doz	1.20	26A522403	Shield, tube.....	.05
R-3	6R5591	18,000 10% 1/2W.....doz	1.20	9K522034	Socket, pilot light: with bracket	.15
R-4	6R6028	22,000 20% 1/2W.....doz	1.20	9R119819	Socket, tube: 7-pin miniature; with dummy lug.....	.15
R-5	6R2035	82 10% 1/2W.....doz	1.20	9A70208	Socket, vibrator: 4-pin.....	.20
R-6	6R5690	6800 10% 2W.....	.25	4K481689	Washer, felt.....doz	.20
R-7	6R6004	1 meg 20% 1/2W.....doz	1.20	MOUNTING PARTS AND ACCESSORIES		
R-8	18B531539	Control, volume and tone: (A) volume 250K, tapped at 125K, with on-off switch; (B) tone 1 meg.....	2.10	7K522056	Bracket, receiver mtg.....	.25
R-9	6R2119	15,000 20% 1/2W.....doz	1.20	43A501295	Bushing, mounting.....	.20
R-10	6R3927	2.2 meg 20% 1/2W.....doz	1.20	42K512784	Strap, receiver mtg.....	.20
R-11	6R6004	1 meg 20% 1/2W.....doz	1.20	1V522214	Kit, Mounting Parts and Accessories (includes the items listed below).....	2.25
R-12	6R6015	220,000 20% 1/2W.....doz	1.20	8A4491	Capacitor, noise suppression (gen)	.85
R-13	6R2122	4.7 meg 20% 1/2W.....doz	1.20	4S7688	Lockwasher: 1/4 int-ext; large (strap to bulkhead mtg).....doz	.15
R-14	6R6414	270,000 10% 1/2W.....doz	1.20	4S114693	Lockwasher: 1/4 int-ext (strap to receiver mtg).....doz	.25
R-15	6R6432	270 10% 1/2W.....doz	1.20	2S2878	Nut, hex: 1/4-20 x 7/16 (strap to bulkhead mtg).....doz	.15
R-16	6R476130	2200 20% 2W.....	.25	3S9694	Screw, machine: 1/4-20 x 1-1/2 hex head (strap to bulkhead mtg).....doz	.50
R-17	6R2037	56 10% 1W.....	.20	3S120082	Screw, sheet metal: #8 x 3/8; Phillips head (instrument panel to receiver bracket mtg).....doz	.20
R-18	6R2037	56 10% 1W.....	.20	3S7297	Screw, machine: 1/4-20 x 1/2; hex head (strap to receiver mtg).....doz	.25
T-1	24C485553	1st IF, 455 Kc.....	1.45	6A4141	Suppressor, noise (distributor lead).....	.30
T-2	24K485554	2nd IF, 455 Kc.....	1.45	TUNER - 77D522054 (AT-117) (See Electrical Parts section for electrical parts)		
T-3	25B70171	Output Transformer.....	2.10	77D522054	Tuner, complete.....	21.50*
T-4	25C501303	Power Transformer.....	4.45		exch	16.15
<u>Part Number</u> <u>Description</u> <u>List Price</u>				76K522275	Core, iron: with screw (L-1,2 & 3).....	.55
MECHANICAL PARTS				5A501013	Grommet, rubber (L-1,2 & 3 core mtg).....doz	.50
9K592648	"A" Lead & Fuse Receptacle Assem- bly: includes fuse.....	.85		1K522379	Pointer Arm Assembly.....	.75
7K531565	Bracket, dial background.....	.35		46A502506	Sleeve, iron (inside L-1 & 2 coil shield).....	.35
42B485548	Clip, coil can mtg (T-1 & 2).....doz	.35		41A501096	Spring, pointer arm (anti-back-lash).....	.10
42A522402	Clip, tube shield mtg.....	.05		4A501039	Washer, "C" (pointer arm retaining).....per/c	.50
42A4215	Clip, vibrator grounding.....	.10				
15K531567	Cover, bottom: less speaker.....	2.80				
15K531564	Cover, top.....	1.85				
13D522024	Escutcheon, dial.....	2.85				
36B522020	Knob, disc (tone control).....	.40				
36K522022	Knob, disc (dummy knob, tuning shaft).....	.40				
36B522008	Knob, control: includes setscrew (vol, tuning).....	.75				

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

\*Plus Federal Excise Tax At Current Rate